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Spaceport News

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John F. Kennedy Space Center

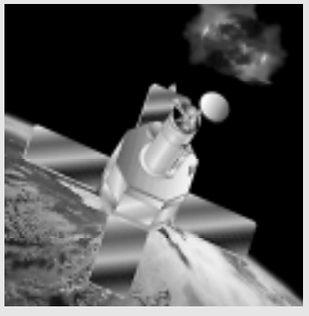
Mission Update

Shuttle-Mir

Smooth Sailing: U.S. astronaut Andy Thomas and new Mir 25 crew mates Talgat Musabayev and Nikolai Budarin are awaiting the arrival on March 17 of a Progress resupply vehicle. A spacewalk had to be canceled when the two cosmonauts could not open a secondary latch on the airlock hatch. Another attempt won't be made until after the Progress arrives. Below, Thomas is shown on Mir during the STS-89 mission.

TRACE

TRACE
Pegasus XL, Vandenberg AFB
March 19
The Transition Region and Coronal Explorer (TRACE) will study the connection between the sun's magnetic fields and the heating of its corona, complementing data from the orbiting Solar and Heliospheric Observatory (SOHO).



LUNAR Prospector (upper) is mated to the Trans Lunar Injection Module Dec. 18 last year at the Astrotech processing facility in Titusville. The Star 37 motor in the module gave the spacecraft the needed additional velocity to complete the nearly five-day journey to the moon.

Water found on Earth's moon

There is a high probability that water ice exists at both the north and south poles of the moon, according to initial scientific data returned by NASA's Lunar Prospector.

The Discovery Program mission also has produced the first operational gravity map of the entire lunar surface, which should serve as a fundamental reference for all future lunar exploration missions, project scientists announced March 5 at NASA's Ames Research Center.

Just two months after the launch of the cylindrical spacecraft, mission scientists have solid evidence of the existence of lunar water ice, including estimates of its volume, location and distribution. "We are elated at the performance of the spacecraft and its scientific payload, as well as the resulting quality and magnitude of information about the moon that we already have been able to extract," said Dr. Alan Binder, Lunar Prospector principal investigator from the Lunar Research Institute, Gilroy, Calif.

The presence of water ice at both lunar poles is strongly indicated by data from the spacecraft's neutron spectrometer instrument, according to mission scientists.

(See MOON, Page 6)

AXAF completes critical tests

The Advanced X-ray Astrophysics Facility (AXAF) program got some good news recently when the spacecraft completed critical tests.

AXAF was originally scheduled to arrive in Florida

(See AXAF, Page 6)

ARTIST'S concept of AXAF on orbit. AXAF's 33-foot long X-ray telescope is the largest and most powerful ever to be built.

NASA's SNOE launched Feb. 25

A student-developed spacecraft called the Student Nitric Oxide Explorer (SNOE) was launched Feb. 25 aboard a Pegasus rocket from Vandenberg Air Force Base, Calif.

SNOE is one of a long list of NASA spacecraft slated for liftoff this year aboard expendable launch vehicles from both the West and East Coasts.

The Earth-orbiting satellite was designed and built by a team of students, faculty and engineers from the University of Colorado, Boulder. It is being operated around the clock by a team based at the Boulder campus.

SNOE carries instruments to measure nitric oxide in the Earth's upper atmosphere, the intensity of X-rays from the sun, and ultraviolet light from the Earth's aurora. The mission is designed to last one year.

SNOE, shown here during preflight processing, weighs just 254 pounds.More than 100 students have participated in the project to date.

12 more NASA employees take advantage of buyout

An additional 12 NASA civil servants have departed the space center under the Fiscal 1998 separation incentive, or buyout, opportunity.

An additional opportunity recently became available to NASA employees with at least 30 years of federal service and who are at least 55 years old. This latest Optional Retirement election closes April 3. April 3 also is the deadline for resignations in conjunction with the separation incentive. Employees wishing to depart the agency under Early Out authority must retire by March 31, the date the authority ends. Civil servants at least 50 years of age with 20 years of service, or any age with 25 years of service, are eligible to depart under the Early Out offer.

A closing date of Sept. 30 is still in effect for civil servants in the Quality Assurance and Occupational Health Specialist fields to take advantage of the original buyout opportunity.

Resignations

Quear, Anita L.	OP	01/09/98
Gordon, Kathleen B.	LO-SOD-1	01/20/98
Corne, Karen E.	BD-C	01/23/98
Moore, Gregory B.	AA-A	01/30/98
Rosato, Mark S.	LO-DEP	01/30/98
Woodcock, Wendolyn M.	EI-F	01/30/98

Retirements

Armstrong, Cheryl A.	MK-MIO	01/31/98
Gibson, Gerald L.	PZ-B2	01/31/98
Lackie, Warren	PK-D2	01/31/98
McCalman, James R.	FF-R-B	01/31/98
Michel, Virginia K.	GG-B4	01/31/98
Stevens, Joyce A.	FF-S2-D	01/31/98

Aerospace environmental technology conference set for June 1-3 in Huntsville

The third Aerospace Environmental Technology Conference will be held at the Marshall Space Flight Center, Huntsville, Ala., June 1 – 3. The three-day conference will provide a forum for materials and processes engineers, scientists and managers to describe, review and assess the field of evolving replacement and clean propulsion technologies.

For registration information, contact Rhonda Chaney, tel. 205 890-6372, or 1-800-448-4035. For exhibit information, contact Bob Cothran, tel. 205 890-6372, or 1-800-448-4035.

International Space Station

Amazing fact

• By the time International Space Station (ISS) assembly gets under way, cumulative on-orbit time of the Space Shuttle will be around the 800-day mark and U.S. astronauts will have spent more than 950 days working and living aboard the Russian Space Station Mir.

• Average altitude of the station will be 220 miles. It will orbit the Earth 18 times each 24 hours and will have a view of 85 percent of the Earth's surface.

• The International Space Station will be 360 feet end-to-end and and 290 feet in length. It will weigh 470 tons.

— NASA ISS Research Plan and Boeing fact sheet

Calling all Oklahomans!

The Oklahoma Heritage Association is gathering material about the state's contribution to the space program. It will be featured in a book as part of the association's popular Horizons Series, one in a series of publications on Oklahoma's history and heritage.

The association is asking that any current or past NASA employee who lived, attended school or was born in Oklahoma to contact Gini Moore Campbell toll-free at 1-888-501-2059.

The book is scheduled to be released in the spring or summer of 1999.

Disney offers discount to KSC

KSC employees have until April 5 to take advantage of a discount for admission to Disney's The Magic Kingdom, Epcot or Disney-MGM Studios.

Price of admission has been reduced by more than $10 to $31.50 per person. The tickets can be purchased at a KSC NASA Exchange Store, Monday through Friday. The tickets are not available at the front gate of any of the three theme parks.

Purchase of a ticket also entitles the employee to purchase a Pleasure Island ticket at 50 percent off the regular gate price, also through April 5.

Credit union elects board

The KSC Federal Credit Union recently held an election for the 1998 Board of Directors. Re-elected to the board were Lonnie Blocker and Marilyn Cherubini. Newly elected is Sandra Kennedy.

Appointed to the credit union's Supervisory Committee were Barbara LeDuke, John Styles and Joanne Wilson.

Employees of the Month

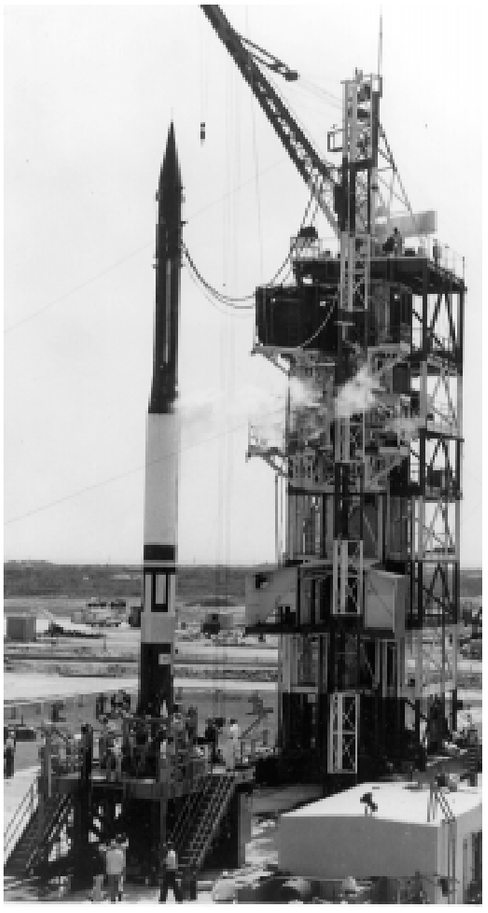
HONORED in March were (from left, sitting): Gisele Altman, Administration Office; Donald Carnes, Payload Carriers Program Office; Susan Wall, Procurement Office; Arthur Beller, Shuttle Processing Directorate; (from left, standing) Andy Finchum, Logistics Operations Directorate; Tim Lewis, Shuttle Processing Directorate; David Barker, Safety and Mission Assurance Directorate; Maria Littlefield, Engineering Development Directorate; Anthony Killiri, Payload Processing Directorate; and Robert Cummings, Biomedical Operations Office. Not shown are Tom Nguyen, Checkout and Launch Control System; Lori Jones, Installation Operations; and Wanda Henderson, Chief Financial Officer's Office.

KSC takes part in UCF expo

KSC TOOK PART in the student-produced 1998 University of Central Florida Engineering Expo on Feb. 19 in Orlando. Lisa Kestel (second from left) helped staff an exhibit on NASA. The NASA Technology Transfer Office had an adjacent exhibit in conjunction with the Southern Technology Applications Center (STAC, NASA's southeast region technology transfer partner). The two exhibits earned high marks at an awards ceremony later the same day, with the NASA exhibit taking first place in the Professional Exhibit category. The NASA-STAC exhibit won third place in the Educational Exhibit category.

Clinics offer packets on controlling anger

Area medical clinics have packets available this month on the topic of controlling feelings of anger. While most of us can control our anger, there are times when the emotion becomes unmanageable. The packets provide information on understanding anger, and techniques for expressing it constructively and redirecting it in a positive way.



Vanguard 1 marks 40th anniversary

It doesn't get a lot of recognition, but the Vanguard 1 satellite achieved a number of successes that are still noteworthy today.

Vanguard 1 was launched 40 years ago on March 17, 1958, following Explorer I as the second U.S. satellite. The launch took place just months after the first Vanguard launch attempt failed in spectacular fashion, prompting critics to dub the Naval Research Laboratory team responsible for Vanguard as "Project Rearguard."

In a pamplet honoring the 25th anniversary of the launch, team members recalled the launch and the milestones it achieved. The satellite continues to orbit the Earth today, the oldest man-made body in orbit. It contained a tiny minitrack transmitter that was powered by the first solar cells in space. Of all the satellites launched at that time in honor of the International Geophysical Year, Vanguard 1 provided the most accurate determination of the Earth's shape, including its equatorial bulge. The Vanguard team also developed the successor to the Vanguard 1 launcher, the Thor-Vanguard launch vehicle, which became known as the Delta, one of the most reliable expendable launch vehicles ever built. And last but not least, the Vanguard team was transferred to NASA in 1958, with the team assigned to the new Beltsville Space Center — today known as Goddard Space Flight Center in Greenbelt, Md.

LAUNCH Complex 18A on Cape Canaveral was the site for Vanguard launches. At left, the Vanguard Satellite Launching Vehicle (SLV) is shown undergoing prelaunch checkout. At right is the spherically shaped satellite, which weighed less than five pounds.

Keep paper usage down

In the age of electronic mail, paper usage at KSC continues. The KSC Duplicating Facility decreased paper production by 7 percent each year in fiscal 1996 and 1997, equivalent to 10,000 reams of paper.

Employees are encouraged to conintue keeing paper usage down and use two-sided copying whenever possible. The new Lanier copier machines provide automatic document duplexing. Printing on both sides of the paper reduces costs and also helps conserve natural resources.

Community support

REACHING OUT — USBI Vice President and General Manager Don Reed (second from right) presents a $5,000 donation to the United Way of Brevard County on March 2. With him are (from left) Bill Ellis, chairman of the United Way of Brevard board of directors; Ernest Briel, vice chair; and (right) Rob Rains, president of the United Way of Brevard.

NASA Engineering Day Feb. 9, 1998

By Ember Smith

In conjunction with National Engineering Week Feb. 22-28, the Equal Opportunity Program Office invited about 100 local Middle School students, mostly minority and female, to KSC to participate in NASA Engineering Day activities Feb. 9. The goal of the program is to heighten the awareness of the students to the opportunities available in engineering sciences.

This year James Madison Middle School in Titusville, Andrew Jackson Middle School in Titusville, and Space Coast Middle School in Port St. John participated in the day's events. Activities began at the U. S. SPACE CAMP, where instructors led the students through a morning of engineering activities, building and launching model rockets; building a mock-up of the Space Station; and taking part in a Strange Science show. Students were mentored by KSC engineers who volunteered their time to help the students. This year's volunteers were Nate Wright, Howard Sterling, and Tim Lewis, all of NASA.

From SPACE CAMP, the students were transported to the KSC Mission Briefing Room where they were served a box lunch. After lunch, Loren Shriver, the deputy director of Launch and Payload Operations addressed the students. He encouraged them to reach high to achieve their goals and dreams. He also shared his experiences as an astronaut. Also, from the University of Central Florida, Jacqueline Smith, the director of Minority Engineering Programs, spoke to the students, sharing with them the importance of taking control of their educational choices and striving to take the more difficult classes to prepare themselves for their future.

One of the highlights of the day was the poster competition. Posters were created in advance by the students using the theme selected for the National Engineers Week: "Engineers: Turning Ideas into Reality." The posters were displayed in the Mission Briefing Room where JoAnn Morgan, associate director for Advanced Development and Shuttle Upgrades; Tip Talone, director, Space Station Hardware Integration Office; and Dr. Irene Long, director, Biomedical Office, served as judges.

Each student received a packet of materials representing the National Engineers Week theme, a NASA Engineering Day souvenir pencil pack, and a certificate of participation.

Bus transportation was provided by NASA. Funds for the SPACE CAMP activities, the luncheon and the souvenirs were provided by the KSC Exchange Council.

STUDENTS began their day at the U.S. SPACE CAMP, where they built and then launched model rockets. Here, they prepare the rockets for liftoff.

A STUDENT looks at one of the displays at U.S. SPACE CAMP, above. At left, one of the students poses in front of the many posters displayed in the Mission Briefing Room of the Operations and Checkout Building.

Collins tapped as first female Shuttle commander

A suit technician helps astronaut Eileen Collins prepare for her second spaceflight.

The first woman to serve as pilot on a Space Shuttle mission also will be the first woman to serve as a mission commander.

Eileen Marie Collins earned the first distinction in 1995 on STS-63. She'll earn the second later this year on STS-93, which will carry the Advanced X-ray Astrophysics Facility (AXAF) into orbit.

Collins became an astronaut in July 1991 and has flown in space twice. She is an Air Force lieutenant colonel who graduated in 1990 from the Air Force Test Pilot School at Edwards Air Force Base and has logged more than 4,700 hours in 30 different types of aircraft. She served as pilot on her first two Shuttle flights, STS-63 and STS-84 last year.

Also assigned to the STS-93 crew are Jeffrey Ashby, pilot; and Steven Hawley, Catherine Coleman and Michel Tognini, mission specialists. Tognini represents the French Space Agency, CNES.

COMPACT in size, the X-38 demonstrator arrived at Dryden Flight Research Center last year to begin flight tests.

X-38 drop tests planned this month

The first free-flight tests of the X-38 technology demonstrator were set to begin earlier this month at Dryden Flight Research Center in California. The X-38 is being developed as a crew return vehicle for the International Space Station. It was designed at Johnson Space Center and will be able to hold a seven-person crew.

The full-scale, unpiloted airframe shown above underwent captive-carry tests attached to a B-52 aircraft at Dryden last summer. Further tests could include an unpiloted spaceflight test in early 1999.

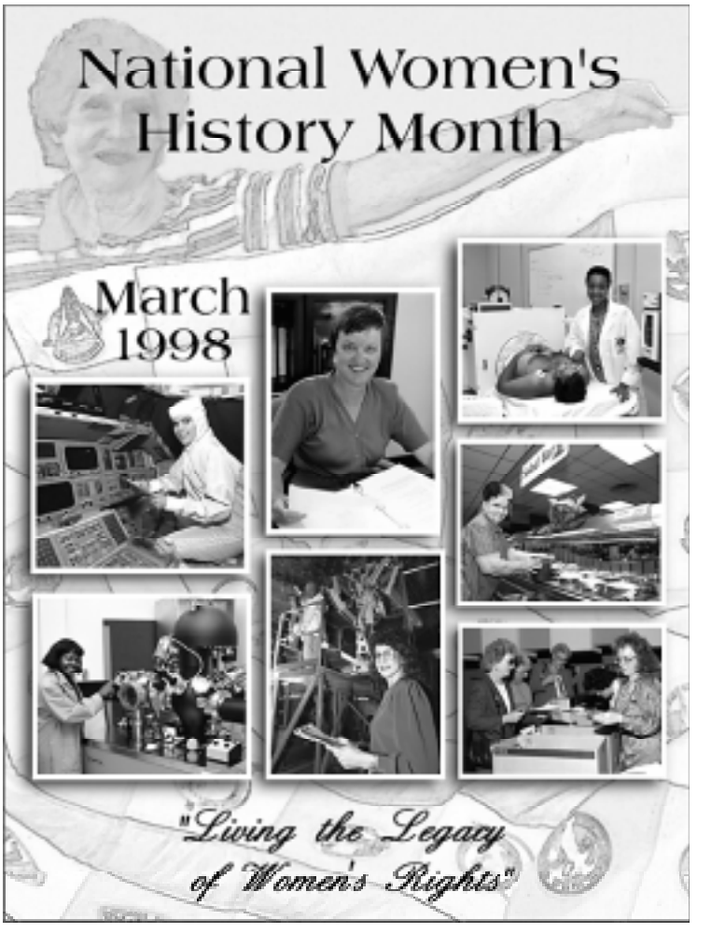
Total estimated cost through the completion of two space test vehicles could be less than $80 million. About 100 people are currently supporting the effort at JSC and Dryden.

Tom Hanks series debuts in April

The Tom Hanks-produced series, *From the Earth to the Moon*, debuts on HBO in April. The first episode airs April 5 at 8 p.m. A wealth of material about the show, including an interview with Hanks, is posted on HBO's Web site at **www.hbo.com**

A familiar face returns to KSC

KAY Hire, the first KSC employee to join the astronaut corps, recently returned to the space center to participate in a Crew Equipment Interface Test (CEIT). She is shown here at the hatch of the orbiter Columbia in Orbiter Processing Facility Bay 3.



VETERAN communications counselor Marilyn Waters, founder and head of Watermark Strategic Communications & Public Relations in Melbourne, will be the speaker at the Women's History Month luncheon at 11:30 a.m., March 19 at the KSC Visitor Complex Lunch Pad. Tickets are $8 each. In Headquarters, contact Jean Rhodes, 867-2307, room 2321B; Charlotte Becker, 867-7631, rm. 3637, or Jane Eitel, 867-3473, rm. 3533. In the Space Station Processing Facility, contact Tracy Anderson, 867-6033, rm. 3054, or Kim Boatright, 867-6479, rm. M036Y. In the Operations Support Building, contact Angie Brewer, 861-3741, rm. 5403Q; in the Logistics Building, contact Connie Dobrin, 861-6408, rm. 3620I, or Sandy McCandless, 861-5381, rm. 3760.

STS-91 payload

TEST RUN — An STS-91 payload, the Alpha Magnetic Spectrometer (AMS), will get a test flight on the Shuttle mission this May and June before it begins a three-year stint as an attached payload on the International Space Station.

The AMS is a particle detector and features the first large magnet ever to be placed in Earth orbit. Its job: search for cosmic antimatter originating from outside the galaxy.

It also may lead to the discovery of so-called "dark matter," the mysterious yet undiscovered material that some scientists say makes up 90 percent or more of the universe. In the photo above right, the AMS is shown undergoing preflight processing in the Multi Payload Processing Facility at KSC. The artist's concept above shows how the payload will fly on the space station.

Moon ...

(Continued from Page 1)

Graphs of data ratios from the neutron spectrometer "reveal distinctive 3.4 percent and 2.2 percent dips in the relevant curves over the northern and southern polar regions, respectively," Binder said. "This is the kind of data 'signature' one would expect to find if water ice is present."

However, the moon's water ice is not concentrated in polar ice sheets, mission scientists cautioned. "While the evidence of water ice is quite strong, the water 'signal' itself is relatively weak," said Dr. William Feldman, co-investigator and spectrometer specialist at the Department of Energy's Los Alamos National Laboratory in New Mexico

"Our data are consistent with the presence of water ice in very low concentrations across a significant number of craters," he added. Using models based on other Lunar Prospector data, Binder and Feldman predict that water ice is confined to the polar regions and exists at only a 0.3 percent to 1 percent mixing ratio in combination with the moon's rocky soil, or regolith.

How much lunar water ice has been detected? Assuming a water ice depth of about a foot and a half — the depth to which the neutron spectrometer's signal can penetrate — Binder and Feldman estimate that the data are equivalent to an overall range of 11 million to 330 million tons of lunar water ice, depending upon the assumptions of the model used.

This quantity is dispersed over 3,600 to 18,000 square miles of water ice-bearing deposits across the northern pole, and an additional 1,800 to 7,200 square miles across the southern polar region. Twice as much of the water ice mixture was detected at the moon's north pole as at the south.

NASA cancels Clark mission

NASA announced Feb. 25 that it was partially terminating the Clark Earth science mission, citing concerns about mission costs, launch schedule delays and on-orbit capability.

The agency said it would retain launch vehicle services and expects to recover some assets of the mission, such as some spacecraft payloads, components and subsystems which may be used on other NASA projects.

Clark was to be part of a duo of spacecraft under NASA's Small Satellite Technology Initiative (SSTI) program. The first spacecraft to be launched, Lewis, also met an ill fate when an errant thruster placed the spacecraft in an excessive spin mode following a flawless launch last Aug. 22.

AXAF ...

(Continued from Page 1)

this June to begin preparations for a launch aboard the Space Shuttle in August. NASA announced late last year that delivery would be delayed. Launch on STS-93 still is targeted for Aug. 26, but the date is under review.

An end-to-end test in early February demonstrated a smooth communications network between the spacecraft and a newly constructed Operations Control Center in Cambridge, Mass. AXAF received and responded properly to about 10,000 instructions. The end-to-end test showed that AXAF can receive, understand and respond to the different types of data that it will receive on-orbit.

The AXAF program is managed by Marshall Space Flight Center, Huntsville, Ala. The mirrors for AXAF are at Huntsville now, undergoing mapping and calibration tests. This involves shining X-rays through the mirrors and then measuring, in great detail, the images they project. The results will tell the exact shape and performance of the mirrors, allowing scientists to better interpret the images captured by the spacecraft. Next, the science instruments will be tested jointly with the mirrors.

AXAF is part of NASA's Great Observatories program. Already on orbit are the Compton Gamma Ray Observatory and the Hubble Space Telescope. Each observatory will study a different portion of the electromagnetic spectrum with unprecedented accuracy, yielding as a whole greater insight into the dynamics of our solar system.

John F. Kennedy Space Center

Spaceport News

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